

Case 3390***Archaeopteryx lithographica* von Meyer, 1861 (Aves): proposed conservation of usage by designation of a neotype**

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Abstract. The purpose of this application, under Article 75.5 of the Code, is to preserve stability and universality of usage of the name *Archaeopteryx lithographica* von Meyer, 1861 by setting aside the existing holotype and designating a neotype.

Keywords. Nomenclature; taxonomy; *Archaeopteryx lithographica*; neotype; Solnhofen; Aves; Jurassic.

1. Several earlier applications (Swinton, 1960, BZN 17: 224–226; Ostrom, 1972, BZN 29: 30–31; Eisenmann, 1974, BZN 31: 114–115) have been submitted to the Commission to conserve the binomen *Archaeopteryx lithographica* von Meyer, 1861 (p. 679). The decisions of the Commission (Opinion 607, 1961, BZN 18: 260–261; Opinion 1070, 1977, BZN 33: 165–166) (a) conserved the generic name *Archaeopteryx* von Meyer, 1861 and the specific name *lithographica* von Meyer, 1861, as published in the binomen *Archaeopteryx lithographica*, and placed them on the Official Lists (Opinion 607) and (b) conserved the specific name *crassipes* von Meyer, 1857, as published in the binomen *Pterodactylus crassipes*, and placed it on the Official List with the provision that it is not to be given precedence over *lithographica* von Meyer, 1861, as published in the binomen *Archaeopteryx lithographica*, by any taxonomist who believes that both specific names apply to the same taxon (Opinion 1070). A number of generic and specific names had been suppressed and placed on the Official Index in Opinion 607.

2. In spite of the comment by Eisenmann (1974) who proposed that the type of the name *Archaeopteryx lithographica* von Meyer, 1861 be fixed as a specimen of a feathered skeleton (BMNH 37001) at the Natural History Museum, London (NHM), the Commission did not take any action on fixing the type of this name, because they believed mistakenly that the London specimen was the type, although no published statement exists supporting their decision.

3. Bühler & Bock (2002) claimed that the type specimen (the holotype) to which the name *Archaeopteryx lithographica* von Meyer, 1861 is attached is the original feather impression studied by von Meyer and now housed in the Museum für Naturkunde der Humboldt-Universität zu Berlin, Bereich Paläontologisches Museum (main slab)

and in the Bayerischen Staatssammlung für Paläontologie und historische Geologie in München (counter slab), and not the NHM specimen of a feathered skeleton (BMNH 37001) as believed by many workers (BZN 29: 30; BZN 31: 114). When von Meyer described and named the original fossil feather, he had only heard about the newly discovered feathered skeleton (the present-day London specimen) (Meyer, 1961, p. 678), had not seen it and did not include this specimen in a 'type-series' for the name. The London specimen is the best known and most frequently cited specimen of this species (see Bühler & Bock (2002) for references). It should be noted that the name *Archaeopteryx macrura* Owen, 1864 used by Stephan (1987) for the taxon containing the London, Teyler and Maxberg specimens is invalid as the Commission suppressed the specific name *Archaeopteryx macrura* (Opinion 607, August, 1961, BZN 18: 260–261). Furthermore, it is most questionable whether one could demonstrate that the original feather impression and the London feathered skeleton belong to the same genus. Moreover some of the other specimens of this fossil, such as a well-preserved Berlin specimen (HMN 1880/81), have been placed in other species or genera while the London specimen is not associated with any valid name other than *Archaeopteryx lithographica*.

4. The name *Archaeopteryx lithographica* von Meyer, 1861 is conserved but it is a nomen dubium because it is not possible to determine whether the type specimen (the original feather impression) belongs to any of the generic or specific taxa of fossil birds recognized from the Solnhofen limestones. Bühler & Bock (2002) agree with those workers who advocate only a single species of ancient feathered bird from the Solnhofen limestones, although some workers recognize up to three genera and species. The number of species recognized is not relevant to the question of whether the feather impressions can be assigned to a known specific taxon according to Stephan (1987, p. 110) who recognized three genera of birds from the Solnhofen limestones and argued that the taxon represented by the name *Archaeopteryx lithographica* von Meyer, 1861 cannot be identified with any of the species he recognized; he restricted this name to the feather impression. Therefore, although the name *Archaeopteryx lithographica* von Meyer, 1861 has been conserved, it cannot be used for any of the avian fossils from the Solnhofen limestones except for the feather impression.

5. If the feathered skeletons from Solnhofen are recognized as a single species, the current valid name for that species would be *Archaeornis crassipes* (von Meyer, 1857). *Archaeornis* Petronievics, 1917 is the oldest available generic name for these birds and *Pterodactylus crassipes* von Meyer, 1857 is the oldest available specific name. The type specimen to which the name *Pterodactylus crassipes* is attached is housed in the palaeontological collections of the Teyler's Stichting, Haarlem, The Netherlands (Nos. 6928 and 6929). If these fossils of feathered skeletons are recognized as belonging to several different generic and specific taxa of ancient birds, the correct names for them would depend on the arrangement of the specimens into these taxa.

6. We argue that following the rules of zoological nomenclature for the taxa represented by the feathered skeletons from the Solnhofen limestones would lead to great confusion, instability and lack of universality, and would violate directly the basic object of the Code 'to promote stability and universality in the scientific names of animals' as stated in the second paragraph of the Preamble.

7. Therefore to preserve stability and universality in use of the name *Archaeopteryx lithographica* von Meyer, 1861, we propose that the Commission sets aside the holotype of *Archaeopteryx lithographica* in the Berlin and München Museums and designates specimen BMNH 37001 in the NHM as the neotype.

8. If this proposal is accepted by the Commission, the original feather impressions would lack a scientific name. However, we urge that these specimens, possessing mainly historical value, continue to be designated by the name *Archaeopteryx lithographica* as they have been for the past 130 years. Nothing would be gained by an insistence on the formal application of the rules of zoological nomenclature to deprive the two original slabs showing the feather impressions representing the original specimens of one of the most important fossils in the history of vertebrate paleontology of their well-established designation of *Archaeopteryx lithographica*.

9. If these proposals are accepted, then the currently valid name for the taxon represented by the feathered skeletons from the Solnhofen limestones would be *Archaeopteryx lithographica* von Meyer, 1861 as defined by specimen BMNH 37001. This action would unite formal zoological nomenclatural decisions with the generally accepted usage by zoologists and paleontologists for the past 130 years.

10. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to set aside all previous type fixations for the nominal species *Archaeopteryx lithographica* von Meyer, 1861 and to designate specimen BMNH 37001 at the NHM as the neotype for the name;
- (2) to emend the entry on the Official List of Specific Names in Zoology for the name *lithographica* von Meyer, 1861, as published in the binomen *Archaeopteryx lithographica*, to record that it is defined by the neotype designated in (1) above.

References

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Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to the Executive Secretary, I.C.Z.N., c/o Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).